

## Description of the appointment process of a tenure track position (assistant/associate/full professor)

### Energy Storages

Location: School of Energy Systems

The rector has approved the description and initiated the appointment process on 7 September 2020.

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### Applied statutes

Universities Act (558/2009)  
Government decree on universities (770/2009)

Regulations of LUT University (12 December 2019)

Decision on the tenure track system of LUT University (11 May 2016)

### Additional information

Further information on the duties of the professor is provided by Professor Jero Ahola, tel. +358 40 529 8524, [jero.ahola@lut.fi](mailto:jero.ahola@lut.fi), On questions regarding appointment, please turn to HR Director Pirkko Partanen, tel. +358 400 540 798, [pirkko.partanen@lut.fi](mailto:pirkko.partanen@lut.fi).

## **1 Background**

Clean energy and water, a circular economy, and sustainable business and entrepreneurship are the key questions to which LUT University seeks solutions through expertise in technology and business with a trailblazer attitude.

LUT University was established in 1969. Our entrepreneurially thinking scientific and international community comprises 5200 undergraduate and postgraduate students and more than 900 employees. There are 80 different nationalities present on our modern campuses in Lappeenranta and Lahti.

Our budget is 80 million euros, of which 35 million is external funding. Our schools – the LUT School of Energy Systems, the LUT School of Engineering Science and the LUT School of Business and Management – conduct research and provide education that are internationally recognised and relevant to both society and business.

### **LUT School of Energy Systems**

The LUT School of Energy Systems focuses systematically on the direct and indirect electrification of all energy use which includes the utilisation of CO<sub>2</sub> to meet hydrocarbon demands, thereby promoting the defossilisation of the entire energy system.

The core vision and goal of the school is to deliver leading research on low-carbon energy technologies and the associated complex, net-zero carbon energy systems and markets. The research and education in the school cover energy technology, electrical engineering, mechanical engineering and sustainability science. The strategic focus areas of the school's research are solar economy and smart grids, energy conversion and storage, digital product processes in mechanical systems, and sustainability. The school also includes the experimental research unit LUT Voima.

We are internationally recognised as a leading centre of energy research, and we have an unparalleled reputation for conducting research that combines academic excellence with an impact on business and society. A key principle in our research is to bridge areas from fundamental theory to empirical work, innovation and close-to-market products, technologies, processes or services that may transform energy systems and improve people's lives globally.

Our school provides Bachelor's, Master's, and doctoral programmes and has Finland's largest group of researchers in the field of energy. The unit employs 25 full professors and 330 staff members overall.

### **Vacant professorship**

Renewable energy resources such as wind and solar power cannot provide electricity steadily since their power production rates change seasonally, monthly, daily, and hourly. Therefore, for the renewable energy resources to become completely reliable as primary energy sources, energy storage is a crucial element. Essentially, excess energy from renewable resources must be stored for later release. Electrochemical energy storage technologies have been considered to solve both short-term storage needs, including batteries and supercapacitors, and long-term needs, including power-to-X, which implies hydrogen, synthetic methane, Fischer-Tropsch fuels, ammonia, methanol, and CO<sub>2</sub> direct air capture, among others. LUT has for years researched the application of these storage technologies on, for example, fully renewable energy production, energy conversion and micro-grids. LUT has also actively researched the electrification of transportation, such as aviation, railways, working machines and marine applications, where energy storages also play a significant role.

The professorship of energy storages constitutes an independent chair in its area of expertise. It is a part of the LUT School of Energy Systems at the Department of Electrical Engineering. The professorship will be located in the Kotka-Hamina region, but the professor will also work on LUT's Lappeenranta campus.

The professorship focuses on electrochemistry applied to energy storages and electrochemical energy conversion processes aiming for a defossilised energy system. The research group headed by the professor will work in close co-operation with other professors of electrical engineering. Other professors at the Department of Electrical Engineering focus on electricity markets, smart grids, electrical machines and drives, power electronics, energy efficiency, IoT in energy systems, solar economy applied electronics, applied control engineering and wind power technology.

The candidate must have proven expertise in the field of applied electrochemistry and/or exceptional knowledge of new material systems for electrochemical energy storages. Candidates must also have a proven ability to realise the research results in real-life proof-of-concepts, carry out testing and apply analysis methods. The position requires knowledge in at least in two of the following research fields:

- computational methods in electrochemistry / advanced modelling and design methods in electrochemical energy storages
- electrochemical energy conversion processes applied to energy storages
- measurement methods and diagnostics in electrochemical energy storage systems
- failure mechanisms of battery storage systems
- materials used in electrochemical storage solutions.

The appointed professor must possess a strong scientific research background in the above-mentioned research fields. Evidence of the ability to acquire research funding, the successful management of projects and cooperation with relevant research institutes, companies and other stakeholders will also be considered an important merit. Applicants must demonstrate the ability to integrate into the strategic blueprint of LUT's electrical engineering unit and to lead the people of their own research group.

The professorship of energy storages will include teaching obligations in undergraduate and postgraduate programmes in the field of electrochemistry.

The professorship will include the following duties related to its field of study:

- planning and execution of undergraduate and postgraduate programmes, including online and classroom teaching
- supervision of final theses and postgraduate studies
- production of high-level international scientific publications
- personnel and financial management of the energy storages research group
- acquisition of external research funding and preparation of related research projects at LUT, nationally, and internationally; heading these research projects when required
- production of relevant new knowledge for the specific needs of Finnish industries
- close cooperation and interaction with LUT's research groups especially at the departments of Chemical Engineering and Energy Technology
- co-operation with Finnish companies and other industrial partners
- networking and cooperation with Finnish and international universities and research institutes
- networking and research collaboration with companies in the Kymenlaakso area.
- societal interaction in the field of energy storages
- general administrative duties related to the university's operations.

The position is at the assistant/associate/full professor levels of the tenure track system and is filled through an open call for a fixed four-year term (assistant/associate professor) or until further notice (full professor). The work starts with a six-month trial period.

## 2 Qualifications

According to the administrative regulations of LUT University, adopted on 12 September 2019, an assistant/associate/full professor is required to have a doctorate, high-level scientific qualifications, experience in heading scientific research, the ability to acquire funding, the ability to provide high-level instruction based on research, the ability to supervise final theses, proof of international cooperation in his/her field of research, and when relevant to the duties of the position, practical experience in the field of the professorship.

Practical experience in the field is not a requirement in this position, but strong evidence of industrial research and development projects is considered an advantage.

The applicant must have research and teaching merits, proof of effective research and the acquisition of external research funding, and international experience. The appointed applicant will be the immediate supervisor of his/her research group and may need to perform other demanding management duties assigned by the university. Therefore, related skills will be taken into consideration in the appointment and attention will be paid to the applicant's merits as defined in LUT's tenure track system (Annex).

Under the universities decree (770/2009), a person in a teaching and research position at a university is required to master the language, Finnish or Swedish, in which he or she teaches. According to the university regulations, section 30, a foreign or Finnish citizen who is not a native of Finland may be appointed to a teaching or research position regardless of the fact that he or she has not demonstrated skills in Finnish and/or Swedish. An applicant for professorships may demonstrate their language skills with a language certificate accepted by the academic council and/or in an interview.

According to the university regulations, section 28, professors are required to have the language skills needed for the successful completion of their duties.

In this position, oral and written fluency in English is required. The applicant must also be prepared to acquire Finnish skills sufficient for carrying out the duties within a reasonable amount of time. The required language skill level is defined by the professor's supervisor together with the person appointed to the professorship.

## 3 Applying for the position

### Application

The application must specify the tenure track level applied to. The deadline for applications is indicated in the vacancy announcement. The application and material for expert assessors should primarily be submitted through the online recruitment system mentioned in the vacancy announcement or e-mailed to the university (recruitment@lut.fi).

The application and its appendices must be in English. The application must include:

- a curriculum vitae
- a copy of the applicant's doctoral diploma
- a full list of publications, including the total number of publications in the Scopus database, the total number of citations, the h-index and Scopus ID. In addition, equivalent information from the applicant's Google Scholar profile is required
- a separate list of the publications submitted for expert evaluation
- publications for evaluation by experts (max. 10)
- a teaching portfolio or an equivalent account of the applicant's teaching qualifications
- an account of the applicant's merits and activities of significance to the vacancy (max. 3 pages)

- an account of the applicant's vision on the development of education, research and projects in the field of the professorship at LUT University (max. 3 pages).

### **Contact information**

Applicants must give the university an e-mail address at which he or she can be reached. If the applicant does not wish to be contacted by e-mail, he or she must give a postal address at which he or she can be reached during the appointment process. The university prefers e-mail.

## **4 Expert evaluators**

### **Selection of experts**

The experts must be impartial. Before the selection of expert evaluators, the applicants must be provided the possibility to comment on their possible disqualification.

Based on the proposal of the selection committee, the dean invites at least three internationally recognised experts to submit a statement on the qualification of the applicants. The university's staff members may not be invited as expert evaluators. To the extent possible, the experts should be chosen with the applicants' fields of specialisation in mind and with a view to impartiality.

Sections 27-29 of the Administrative Procedure Act (434/2003) apply to the disqualification of an expert evaluator.

### **Applications forwarded to expert evaluators**

The selection committee may limit the number of applications forwarded to expert evaluators if there are four applicants or more. At least three applications must be forwarded to the experts. The applications may be limited to the most suitable candidates for the position in the view of the person making the decision. The selection committee must state the grounds for its decision. The applicants will be informed if any applications are excluded from the evaluation.

### **Expert statements**

The expert evaluators must give their statements in writing within two months. More specific dates will be sent to the evaluators along with instructions. In their statement, the experts must evaluate especially the scientific qualification of the applicant, and if possible, also other merits related to the professorship, and rank the applicants in order of preference.

The experts may also discuss the matter amongst themselves and give a collective statement. Expert evaluators may not take part in the appointment process at a later stage.

The statement must be submitted to the university (separate instructions issued) by the deadline.

## **5 Interview and trial lecture**

Applicants deemed qualified for the position by the experts will be invited to an interview. The selection committee may ask the applicants to give a public trial lecture.

## **6 Appointment**

The tenure track committee makes a proposal to the dean concerning the appointment. The dean then makes a proposal to the rector on filling the position or leaving it vacant. The

proposal shall be based on the merits presented by the applicants, expert statements, possible trial lectures and other related matters.

The evaluation of the applicant's qualifications takes into account scientific publications and other research results with scientific value, pedagogical expertise, teaching experience, teaching related merits, a trial lecture if needed, the number of supervised dissertations, and management and leadership skills. In addition, the applicant's activity in the scientific community, success in raising research funding, scientific work abroad and international positions of trust are considered.

The rector decides either to appoint an applicant or to leave the position vacant.

The appointment proposal may be made or let lapse even if all of the experts have not submitted their statements, provided that the time limit for the statements has expired, at least three experts have submitted their statements, and the impartial treatment of the applicants is not compromised by doing so.

After the rector has made the appointment decision, an employment contract is concluded with the appointed person. If no employment contract is concluded, the rector may, based on the proposal by the dean, make a new decision and appoint another applicant. The rector may also leave the position vacant. When the employment contract is concluded with the person appointed, the final decision is made known to all applicants.

## Tenure track appointment criteria

The positions below require a doctorate in an applicable field, a research field that fits the LUT strategy (see LUT Strategy 2030), a goal-oriented plan for the work in question, teaching experience and an up-to-date teaching portfolio. The Table at the end of this document can be applied to the evaluation of teaching merits.

In international recruitments, the evaluation must take into account that applicants from outside of Finland and Europe may not have been involved in Finnish or European research projects and have thus not taken into consideration the Finnish Publication Forum classification. Such applicants are evaluated in terms of their success in acquiring competitive funding through their own national channels or through international ones, and in terms of impact factors of scientific journals in their own field. Only in promotion and tenure reviews can the same criteria be applied to them as to Finnish persons.

The following merits of the applicant must be taken into account in the appointment:

### Assistant professor:

- Scientific publications in journals with a national Publication Forum rating.
- Contacts with one's own international scientific community.
- Potential to take part in the acquisition of external funding in the research group and apply for post-doctoral researcher posts of the Academy of Finland.
- Potential to take part in teaching and the supervision of final theses.

### Associate professor:

- Successful publication history after the doctoral defence, target of 3 publications/year with a national Publication Forum rating.
- Proof of participation in international cooperation.
- Successful acquisition of external funding and acting as e.g. a project manager in externally funded projects.
- Applying for post-doctoral researcher posts of the Academy of Finland.
- Participation in the supervision of doctoral students.
- Participation in the commercialisation of research results.
- Participation in teaching, the development of teaching and the supervision of final theses.

### Full professor:

- Proof of successful performance of duties
  1. Scientific research
    - publications: target of 3 publications/year with a national Publication Forum rating; emphasis on recent publications
    - supervised dissertations: approx. one doctorate/year
    - other scientific publications, such as books and chapters
    - citations
    - important keynote/plenary presentations and scientific awards
    - editing work in scientific journals
  2. Academic teaching experience
    - high-quality education proven in different ways, e.g. feedback received
    - up-to-date teaching portfolio
    - development of teaching modules
    - supervision of final theses
  3. Academic leadership

- establishing and heading a research group
  - other leadership experience and feedback received
4. Acquisition of external funding
    - EU, ERC, Academy of Finland and Tekes
  5. Work in the scientific community
    - international scientific societies and expert advisory duties
    - duties influencing the scientific community
  6. Societal impact
    - visibility in societal dialogue
    - corporate funding and external funding not referred to in point 5 above
    - professional experience beyond universities
    - innovations, patents, support for spin-off companies (e.g. board memberships)
    - activity in the university's stakeholder groups

### ***Taking teaching merits into account***

The average value of criteria in the Table is calculated to evaluate teaching merits. The evaluation may include five to seven criteria depending on the decision of the tenure track committee – not necessarily all seven criteria.

Evaluation matrix for teaching merits

	<b>Poor</b>	<b>Fair</b>	<b>Good</b>	<b>Very good</b>	<b>Excellent</b>
<b>1. Teaching experience</b>	Only little and limited teaching experience	Some (1-3 years) teaching experience in a university	Good (at least 4 years) teaching experience in a university or continuing professional education	Extensive (over 7 years) and wide-ranging teaching experience in a university or continuing professional education	Extensive (over 10 years) and wide-ranging teaching experience in a university or continuing professional education or beyond the university and experience in pedagogical management
<b>2. Development of pedagogical skills/pedagogical training (all aspects mentioned must be evaluated)</b>  <b>OR</b> <b>Student or peer feedback on teaching</b>	Only little pedagogical training or only little proof of interest in developing one's teaching skills  OR Student feedback collected, no peer feedback	Some pedagogical training (1-4 ECTS credits) or proof of interest in developing one's teaching skills  OR Positive student feedback, no peer feedback	Pedagogical studies 5–24 ECTS credits and systematic development of teaching skills begun  OR Positive student feedback on several courses over several years. Also peer feedback.	Pedagogical studies 25 ECTS credits and active participation in pedagogical training and other events related to the development of teaching skills and proof of active development of teaching skills  OR Excellent student feedback on different courses over a number of years. Positive peer feedback. Pedagogical studies 5–25 ECTS credits	Extensive pedagogical training (over 25 ECTS credits) and proof of active and goal-oriented development of teaching skills and proof of willingness and the ability to share teaching-related knowledge collaboratively and to support colleagues in the development of teaching skills  and Excellent student feedback on different courses over a number of years.  Excellent peer feedback



<b>3. Development and updating of teaching, also curriculum work</b>  <b>(Documented)</b>	Only little interest in changing or developing one's teaching and only little interest in degree programme development	Some demonstrated interest in learning new teaching methods and/or assessment methods and demonstrated interest in degree programme development	The choice of teaching and assessment methods is based on learning outcomes and participation in degree programme development is consistent with the job description	Learning outcomes, teaching methods and evaluation methods are evaluated and developed systematically and participation in degree programme development is active, constructive and consistent with the job description	In addition to the previous:  demonstrated willingness and ability to support other members of the working community in the development of teaching or documented or published results of the development of one's own teaching or demonstrated significant ability to take responsibility for degree programme development
<b>4. Production of teaching materials</b>  <i>Definition: teaching material is material which is produced to support learning in addition to possible lecture slides</i>	Only little demonstrated interest in producing teaching materials and the production and use of materials consists of conventional use of material available	Some demonstrated interest in producing teaching and study materials	Explicit demonstrated interest in producing teaching and study materials and the teaching materials and their use support learning and the achievement of learning outcomes	Pedagogically sound material produced for study guidance and to support studying and learning and teaching materials are assessed and developed continuously	Pedagogically sound material produced for study guidance and to support studying and learning and teaching materials are assessed and developed continuously and the teaching materials are also used elsewhere (e.g. published as a textbook)
<b>5. Supervision of final theses</b>	Little experience in the supervision of final theses	Some experience in the supervision and examination of final theses	Some experience in the supervision of final theses, incl. the supervision and examination of dissertations	Extensive experience in the supervision and examination of final theses	Extensive experience in the supervision and examination of final theses and experience as a preliminary examiner or opponent
<b>6. Study guidance, supporting and guiding the progress of studies</b>	Little or no demonstrated interest in study guidance	Some demonstrated interest in study guidance	Proof of careful and responsible study guidance as a part of one's own teaching or demonstrated interest in the development of guidance	Proof of active efforts in study guidance beyond one's own teaching duties, e.g. work as a tutor teacher, career guidance	In addition to the previous:  proof of the ability to support other members of the working community in study guidance and its development or documentation and publications on one's own study guidance activities, their results and development
<b>7. Quality of teaching</b> <i>Average score of course feedback (on a scale of 1-5)</i>	Course feedback not collected, or its score is below 2	The average score of course feedback is 2.0 or higher	The average score of course feedback is 3.0 or higher	The average score of course feedback is 3.5 or higher	The average score of course feedback is 4.0 or higher or an honourable mention or award for good teaching